DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Casey, William
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-027463
Date Inspected: 16-Apr-2012

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 700
OSM Departure Time: 1730
Location: Job Site

CWI Name:	Bernie Docena and Fred Von Hoff			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: SAS Tower

Summary of Items Observed:

Caltrans Office of Structural Material (OSM) Quality Assurance Inspector (QAI) Joselito Lizardo was present at the Self Anchored Suspension (SAS) job site as requested to perform observations on the welding of components for the San Francisco Oakland Bay Bridge (SFOBB) Project.

At Tower Base 13 meters diaphragm, weld joint number W109, QA randomly observed ABF certified welder James Zhen ID #6001 continuing to perform 1G (flat position) Submerged Arc Welding (SAW) on the Partial Joint Penetration (PJP) T- joint between the 45mm thick outer West diaphragm and 60mm tower skin plate. The welder was utilizing F7A6-EM12K-H8, 3.2mm electrode with corresponding Esab OK Flux 10.62 flux and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-4062-1. The joint being welded has a 45 degree bevel groove T- joint. The plates were preheated to more than 225 °F using Miller Proheat 35 Induction Heating System with one heater blanket located on top of each plate prior/during welding. ABF/QC Fred Von Hoff was noted monitoring the welding parameters of the welder with measured working current of 550 amperes, 32.5 volts with travel speed of 380 mm per minute and calculated heat input of 2.8 Kjoules/mm. QA noted the welding parameters, the workmanship and appearance of the completed fill satisfactory. During the shift while the SAW cover pass welding was still in progress, fellow QA Danny Reyes took over the observations on the production welding.

At Tower Base Electro Slag Welding (ESW) T-joint ‘K’, this QA randomly observed ABF certified welder Richard Garcia perform 3G (vertical position) Shielded Metal Arc Welding (SMAW) welding repair on the cover of welded ESW. The welder was using SMAW with 3.2mm diameter E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1000 Repair. The weld cover that was

unacceptable due to weld profile was ground smooth then welded. Prior welding, the weld surface area to be welded was preheated to 300°F using propylene gas torch. During the shift, the welder has completed the weld cover repair of the ESW weld joint 'K'.
After the weld cover repair completion of ESW weld joint 'K', the welder has moved to another ESW location 'J' and performed excavation on the previously UT rejected area of the joint. The welder was noted excavating the repair at Y location 3310mm was having a rejected length of 240mm and depth of 33mm. The welder was noted using carbon air arc gouging to excavate the defect from the joint.

Prior to the excavation of the defect, Mr. Mohammad Awal of Caltrans, Mr. Robert Mertz and Aaron Prchlik of METS and this QA were having a discussion about the ESW weld repair mentioned above. During the discussion, it was learned from Mr. Mohammad Awal that it is now allowed to proceed with the excavation/repair pending written approval from Caltrans.

At Tower Base 9 meter South external diaphragm, this QA Inspector randomly observed ABF personnel Jin Pei Wang perform 2F (horizontal position) fillet production welding on the fit lug to the 45mm thick 9-meter South external diaphragm plate on one side and to the 60mm thick vertical stiffener plate on the other side. The welder was using the dual shielded Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1.6mm diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-F3200-2. This QA Inspector observed ABF personnel using Miller Proheat35 Induction Heating System to preheat the plates being welded prior welding. This QA Inspector observed QC Inspector Bernie Docena using a Fluke infra red temperature gauge to verify the preheat temperature of more than 225°F. This QA Inspector performed a verification of the welding parameters and observed 265 amperes and 23.5 volts. The welding appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-D15-F3200-2. During the shift, the welder has completed the fillet welding on two sides of the four (4) fit lugs marked W093-7 and W093-8. The welder held the same preheat for three (3) hours after welding as required.

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, QA has randomly verified the QC VT/MT of the fillet weld joints. The QA verification was performed to verify that the welding and the VT/MT inspection performed by the QC inspector at 9 meter North external diaphragm meet the requirements of the contract documents. At the conclusion of the QA verification it appeared that the weld and the QC inspection complied with the contract documents.

1. P439-1 fillet weld joint, stiffener plate – weld cover QA verified
2. P439-2 fillet weld joint, stiffener plate – weld cover QA verified
3. P439-3 fillet weld joint, stiffener plate – weld cover QA verified
4. P439-4 fillet weld joint, stiffener plate – weld cover QA verified

All other activities related to the job include erection of scaffold for the welders to work on 13 meter South diaphragm perimeter C10 channel fillet welding to the bottom of the diaphragm. The welders were also noted moving of heater blankets for the Miller Proheat 35 Induction Heating System in preparation for the fillet welding of stiffeners above the outer West diaphragm drop in plates.

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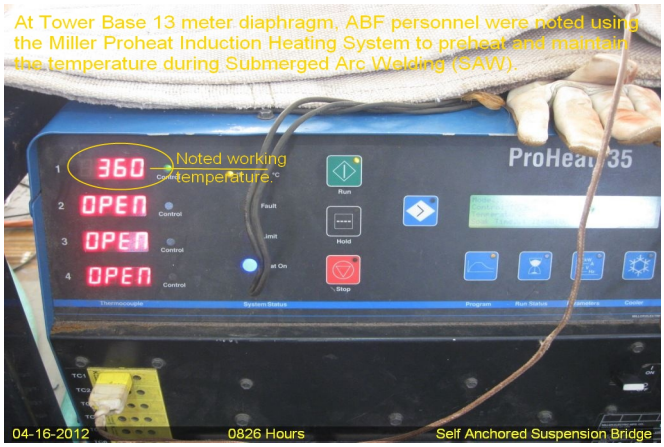

Summary of Conversations:

No significant conversation ocurred today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact SMR Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer